General

Guideline Title

Conservative care options for occupational carpal tunnel syndrome.

Bibliographic Source(s)

Washington State Department of Labor and Industries. Conservative care options for occupational carpal tunnel syndrome. Olympia (WA): Washington State Department of Labor and Industries; 2013 Dec 1. 21 p. [105 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

Practical Application Points

- Work-relatedness usually involves high force, extreme posture work (e.g., meat cutting, roofing); rarely is low force, repetitive work a cause.
- Typical presentation of median nerve entrapment is burning pain on thenar side, especially after work and at night. Hand diagram is more useful than provocative tests.
- Electrodiagnostic studies (EDS) are necessary for diagnostic certainty, carpal tunnel syndrome (CTS) surgery requests, or when time loss (TL) exceeds 2 weeks.
- Conservative treatment may be warranted if substantial symptomatic and functional progress is evident. Surgical release of median nerve entrapment is typically more effective than conservative measures.

Work-Related Carpal Tunnel Syndrome

Work-related CTS is associated with significant preventable disability. Accurate, timely diagnosis and establishment of work-relatedness is critical to prevent delays and ensure optimal outcomes. EDS showing delayed median nerve conduction velocity (NCV) across the carpal tunnel provides definitive diagnosis. Some clinical tests correlate with EDS. Between 30% and 70% of CTS patients may fully recover with certain conservative interventions within a few weeks to a few months. However, 90% of CTS patients fully recover within a few weeks after surgical release of the carpal tunnel. Response to either intervention may be better when care begins early. Due to high success and low risk associated with carpal tunnel surgery, a failure to obtain timely improvement in symptoms and function from a conservative trial warrants timely consideration of specialist referral.

Case Definition

- Clinical presentation of median nerve entrapment (thenar pain/paresthesia, often after work and at night)
- Work place exposure to known CTS inducing activities
- Corroboration of diagnosis by EDS (the latter is most important when response to conservative care is delayed, TL exceeds 2 weeks, and/or CTS release surgery is being considered/authorized)

Evaluation Summary

- Rule-in median nerve entrapment initially with validated clinical methods (symptoms, work exposure, motor function, provocative testing).
- Monitor symptoms, motor function, provocability, and work status to document improvement.
- Make an early referral for EDS and/or specialist consult if: a) symptomatic for over 6-12 months prior to claim acceptance, as conservative care is less likely to benefit; b) time-loss exceeds 2 weeks; or c) significant improvement, including ability to work is not attained within the first several weeks of conservative care.

Intervention Summary

- Nocturnal wrist splinting with daytime use as needed to control symptoms when using hands.
- Improvement may be hastened with additional mobility interventions (e.g., wrist stretching exercises, wrist manipulation/mobilization).
- For diagnostic and surgical referral (particularly in underserved areas) consider assistance from a care coordinator, e.g., from a Center of Occupational Health and Education (COHE).

The National Guideline Clearinghouse (NGC) summary of the Washington State Department of Labor & Industries' Work-related carpal tunnel syndrome diagnosis and treatment guideline has additional information, particularly related to EDS and surgery.

Typical Interventions and Approximate Response Thresholds

1 to 2 Weeks	3 to 6 Weeks	7 to 8 Weeks	Beyond 8 Weeks
• Nocturnal wrist splint with daytime use as needed. • Consider wrist mobilization, myofascial work, stretching/exercise. • Consider work activity, flow, site modification. • Consider corroboration of clinical impression with EDS.	• Improvement (e.g., hand diagram, pinch strength): decrease splint use, reduce care frequency, increase self-mobility, stretching, continue work modifications. • Inadequate improvement: continue splint use 2 weeks, alter additional interventions, and consider additional work modification; EDS required if TL >2 weeks.	• Good Improvement: progressively decrease splint use, reduce care frequency, consider normal work activity. • Inadequate improvement: review compliance with self-care; consider specialty referral and EDS (required if TL >2 weeks).	• Good Improvement: increase reliance on self-directed care, splint use as needed. • Inadequate improvement: specialty referral and EDS (required if TL >2 weeks) if not already scheduled.

EDS, electrodiagnostic study; TL, time loss

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Disease/Condition(s)

Work-related carpal tunnel syndrome

Guideline Category

Diagnosis

Management

Risk Assessment

Treatment

Clinical Specialty

Chiropractic

Family Practice

Internal Medicine

Neurological Surgery

Neurology

Orthopedic Surgery

Physical Medicine and Rehabilitation

Intended Users

Advanced Practice Nurses

Chiropractors

Health Care Providers

Nurses

Occupational Therapists

Physical Therapists

Physician Assistants

Physicians

Utilization Management

Guideline Objective(s)

- To provide concise summaries of published clinical and scientific literature regarding utility and effectiveness of commonly used conservative approaches for work-related carpal tunnel syndrome; history, examination and special studies; recommendations for supportive, manual, and rehabilitative care including practical clinical resources (useable without licensing/charge in practice for non-commercial use)
- To inform care options and shared decision-making

Target Population

Workers with, or at risk for, carpal tunnel syndrome

Interventions and Practices Considered

Diagnosis/Evaluation/Risk Assessment

1. Evaluation of clinical presentation
2. Use of hand diagrams
3. Electrodiagnostic studies (EDS)

Treatment/Management

1. Nocturnal splinting
2. Mobility interventions (e.g., wrist stretching, manipulation/mobilization)
3. Referral
4. Consideration of work activity, flow, and site modification
5. Surgical release

Major Outcomes Considered

- Accuracy and clinical utility of commonly used diagnostic tests
- Surgery rate
- Rate of return-to-work
- Symptoms improvement
- Neurophysiologic parameters
- Functional outcome
- Quality of life

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

An extensive search was done on carpal tunnel syndrome (CTS) on PubMed and other electronic databases. Articles were retrieved by the Labor and Industries librarians. Additionally citation tracking was performed by department staff and committee members for potentially relevant studies not retrieved from electronic databases.

The bulk of the literature search and review for this update was conducted during October 2012 to March 2013. Additional searches were conducted as requested by the Industrial Insurance Chiropractic Advisory Committee Subcommittee members. Search results were limited to human adults only and English only. The original literature search was conducted in fall of 2008 through spring 2009. Studies that were published in the last 10 years were emphasized.

The following keywords were used in PubMed:

Terms for CTS (the condition) were searched in combination with terms for each of the other categories (diagnosis, conservative treatment, and outcome).

- The condition: Carpal tunnel syndrome, median nerve root entrapment
- Work-relatedness: Occupational health, injury, disease, workers compensation, return to work, disability
- Diagnosis: Diagnosis, symptoms, signs, validity, reliability, sensitivity, specificity, electrodiagnostic studies
- Treatment: Treatment, conservative therapy, interventions

Number of Source Documents

163 reviewed (98 cited)

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Evidence was graded on a 1-5 scale with 1 being the highest grade:

1 = Randomized controlled trial

2 = Cohort study, prospective or historical

3 = Case-control study

4 = Cross-sectional study

5 = Case series

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Individual articles were reviewed by both a clinical expert and epidemiologist with subsequent clinical expert group review to resolve inconsistencies.

Assessing Study Methodologic Quality

Attributes of study methodology quality vary according to the clinical procedure (e.g., diagnostic, therapeutic intervention) looked at, and specific research questions being studied. The American Academy of Neurology's Clinical Practice Guideline Process Manual offers a comprehensive guide to systematic evidence review, quality attributes and consensus process that generally serves as the approach taken by Industrial Insurance Chiropractic Advisory Committee (IICAC).

General attributes identified when extracting evidence from studies include identification of population, the intervention and co-interventions and outcomes being addressed in each study. The clinical questions addressed such as diagnostic accuracy, therapeutic effectiveness, or causation are determined. Studies are extracted into evidence tables including quality attributes and/or ratings which are reviewed both by department staff and committee members (usually 2 per study).

Specific quality attributes include: Diagnostic Accuracy – design, spectrum of patients, validity and relevance of outcome metric; Therapeutic Interventions – comparison groups (no treatment, placebo, comparative intervention), treatment allocation, blinding/masking (method and degree: single, double, independent), follow-up (period and completion), and analysis (statistical power, intent-to-treat). Specific attention is paid to several factors including reporting of outcomes (primary vs. secondary), relevance of outcome (e.g., function versus pain), and meaningfulness (clinically important change versus minimally detectable change).

Synthesizing Evidence

Consideration of study quality (class), significance (statistical precision), consistency across studies, magnitude of effect, and relevance to populations and procedures were taken into account in preparing draft summaries. Special attention was given to clarifying conclusions related to the clinical questions of interest. Evidence, particularly with low tech and highly diffused examination and conservative procedures addressed here, is rarely truly "definitive," even when multiple studies exist. Inconsistent conclusions typically reflect error (systematic, random) and/or bias in studies. Data pooling via meta-analysis is useful to reduce random error when studies are of sufficient power and methodologic strength. Larger meaningful effect size may increases confidence in findings.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The conservative care resource/guideline process can be described in the following steps:

- Once a topic for a resource/guideline is selected, a subcommittee of the Industrial Insurance Chiropractic Advisory Committee (IICAC) made up of regular members identifies additional content experts to join the subcommittee and/or serve as consultants. Various clinical specialists may provide specific input or be invited to give a presentation to the subcommittee.
- A systematic review and summary of the relevant peer-reviewed clinical and scientific literature is done (primarily by department staff and subcommittee members with specific interest and/or expertise in a topic). Claim and billing data from Labor & Industries may also be reviewed.
- Literature is retrieved, assessed for quality and summarized in evidence tables which are presented to the subcommittee for review. Then at a variable series of group meetings and phone conferences, the evidence with greatest relevance to the resource/guideline topic is highlighted.
- Based on this literature review and assessment by the subcommittee, department staff typically develop an initial draft resource guideline generally organized as follows:
    - General summary of topic, case definition, clinical evaluation, interventions, and clinical progress
    - Checklist for general chronological management with expected clinical and progress thresholds
    - Readily usable functional progress instruments for a given condition
    - Evidence summaries for clinical assessment (e.g., history, examination, imaging and special studies, prognostic and management issues, workers' compensation issues)
    - Evidence summaries for conservative interventions (e.g., physiotherapeutic modalities, bracing, manipulation and mobilization, soft tissue techniques, exercise and rehabilitation approaches, special interventions, common medications [injected and oral]), and workers compensation specific interventions (e.g., ergonomic interventions)
    - Additional materials (glossaries, procedure descriptions, instrument scoring)
    - Evidence and methodology process used in development
    - Citations
- Subcommittee members critique and revise the guideline based on what is most useful for the clinician in diagnosing and treating the condition in question. Additional expertise, consultation, and literature searches may also be added. This results in a second draft guideline that is then shared with the full advisory committee to obtain their input. At this stage specific content experts/reviewers may be sought as the subcommittee identifies particular issues.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A retrospective study of 120 patients self-selecting either surgery or non-surgical treatment explored the cost effectiveness of both approaches. Non-surgical interventions included physical therapy, splinting, and steroid injections (used on just 18 patients). It did not differentiate between various physical approaches such as exercise and mobilization. The study matched patients based on available characteristics of age, gender, severity, nerve conduction velocity (NCV) findings, as well as administrative factors such as insurance coverage. A cost utility ratio was calculated

for direct costs of therapy concluding that non-surgical care averaged about $300 more than surgical care. Surgery is more cost effective in the long term for treating carpal tunnel syndrome (CTS) patients.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

- After the full advisory committee and special reviewers provide input, a third draft is produced and distributed to professional and specialty groups, the Industrial Insurance Medical Advisory Committee (IIMAC) and others who have expressed interest for broader public comment. This draft is also posted on the web for a four-week period for public review and comment.
- Once all public comments are received and reviewed, responses are provided by the subcommittee. Both comments and responses are posted on the web.
- The subcommittee may make further revisions to the draft guideline based on public input and any other information they have received. This then results in a fourth draft.
- The fourth draft is presented to the full advisory committee in an open public meeting. Oral comments are invited from the public, and the full committee may recommend further changes, potentially creating a fifth and final draft.
- Once the full committee makes the advisory recommendation to adopt the resource/guideline, it becomes final and is again posted on the web and distributed as before.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

In general, the recommendations were based primarily on a comprehensive review of peer-reviewed published scientific literature. In cases where the data did not appear conclusive, recommendations were based on the consensus opinion of the committee.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Use of appropriate conservative care options for occupational carpal tunnel syndrome (CTS)
- Use of evidence-informed discussions by attending providers regarding evaluation and care options for patients with occupationally-related carpal tunnel syndrome for the purpose of shared decision-making
- Utilization of validated tools for diagnosing CTS and tracking functional improvement
- More timely referral for specialty care with better patient selection

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

This document is intended to inform care options and shared decision-making. It is not a standard of care, claim management standard, or a substitute for clinical judgment in an individual case. This practice resource does not change Washington State Department of Labor and Industries coverage or payment policies.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Chart Documentation/Checklists/Forms

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Timeliness

Identifying Information and Availability

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 Dec 1

Guideline Developer(s)

Washington State Department of Labor and Industries - State/Local Government Agency [U.S.]

Source(s) of Funding

Washington State Department of Labor and Industries

Guideline Committee

The Washington State Department of Labor and Industries' Industrial Insurance Chiropractic Advisory Committee's Subcommittee on Policy, Practice, and Quality

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

The Washington State Department of Labor and Industries is a public state agency and did not receive any outside funding and has no conflicts of interest to report.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Washington State Department of Labor and Industries Web site .

Availability of Companion Documents

A carpal tunnel progress checklist and hand diagram are included in the original guideline document .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on July 15, 2014.

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